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To understand how to switch our training from log-likelihood objective to RL scenario, let's look at both from the mathematical point of view. Log-likelihood estimation means maximizing the sum $\sum_{i=1}^N \log p_{\text{model}}(y_i|x_i)$ by tweaking model's parameter, which is exactly the same as minimization of KL-divergence between the data probability distribution and probability distribution parameterized by the model, which could be written as maximization of $\mathbb{E}_{x \sim p_{\text{data}}} \log p_{\text{model}}(x)$

On the other hand, the REINFORCE method from chapter 9 has the objective to maximize $\mathbb{E}_{s \sim \text{data}, a \sim \pi(a|s)} Q(s, a) \log \pi(a|s)$

Later on the same page

6. Estimate of the gradient $\nabla J = \sum_T Q \nabla \log p(T)$

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Switching to argmax mode makes the decoder process fully deterministic and provides the baseline for REINFORCE policy gradient in the formula

$$\nabla J = \mathbb{E}[(Q(s) - b(s)) \nabla \log p(a|s)]$$